

# **Searching the Traumatic Stress Literature**

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The literature of post-traumatic stress disorder and other mental-health sequelae of traumatic events is diverse. It is international in origin, interdisciplinary in approach, and eclectic in methodology. In order to facilitate the use of this literature in the study and treatment of PTSD and related mental disorders, the National Center for Post-Traumatic Stress Disorder has undertaken the production of an electronic index. This chapter will describe the PILOTS (Published International Literature On Traumatic Stress) database and suggest effective ways to use it to advance research and clinical work.

Given the excellent indexing of the medical literature provided by the National Library of Medicine's MEDLINE, and the broad coverage of psychology in the American Psychological Association's PsycINFO, some people have questioned the need for a specialized database to cover the traumatic stress literature. It is precisely the breadth of coverage of MEDLINE, PsycINFO, and other large databases that makes a specialized index desirable. The PILOTS database uses an indexing vocabulary designed specifically for the traumatic stress field, one that takes into account the often-divergent terminologies used in the several mental health disciplines. This vocabulary (which is set forth in the PILOTS Thesaurus), especially when used in combination with natural-language terminology and Boolean logic, allows a flexibility and precision not easily attained in more general databases except by expert information specialists. In addition, the PILOTS

database is more complete in its coverage of the traumatic stress literature than other databases. MEDLINE provides complete coverage of over 8,000 periodical titles, but until 1994 did not index the *Journal of Traumatic Stress*, the only scientific journal in the world that is entirely devoted to PTSD; nor does it index material published in book form. While PsycINFO includes book material, it also restricts its journal indexing to a predetermined list of titles. In contrast, the scope of the PILOTS database extends to material from any source, in any format—so long as its subject matter is traumatic stress.

In addition to a description of the PILOTS database and a discussion of those features which distinguish it from other indexes relevant to traumatic stress studies, this presentation will discuss methods for effective searching of PILOTS and other bibliographic databases. These will include database selection, search strategy design, and iterative searching techniques.

### The Historical Context

Ever since the Royal Society of London began publishing its *Philosophical Transactions* in 1665, scientists have reported their discoveries in the professional journals. It did not take long for the number of scientific journals to exceed the ability of readers to keep up with them. To alleviate this problem, journals began to include brief summaries of papers published in other countries; before long publishers began producing serials consisting entirely of abstracts. During the nineteenth century librarians and learned societies began to prepare indexes to the periodical literature, so that someone walking into a library might be able to extract a particular paper from the thousands of bound volumes weighing down the shelves.

The Royal Society's *Catalogue of Scientific Papers*, which began publishing in 1867, indexed over 1,500 periodicals by author. A few years later, the U.S. Army began producing the *Index-Catalogue of the Library of the Surgeon-General's Office* and *Index Medicus*, two bibliographies that offered a subject approach to the medical literature. The expansion of subject indexing to other disciplines had to wait for the development of classification schemes and lists of subject terms—

no trivial matter, especially when an index is intended to serve a worldwide audience.

The production of an abstract journal or a periodical index naturally lends itself to computerization. Not only is the computer used to simplify the reformatting of weekly or monthly issues into semiannual or annual cumulations, it allows users to mechanize the process of searching for a particular entry, or of locating those entries that satisfy desired criteria. Techniques for this were developed by contractors working for the National Aeronautics and Space Administration, the National Library of Medicine, and the Department of Defense—organizations that shared three characteristics: an immense body of literature, a clientele with a strong incentive to use this literature, and an ample supply of the taxpayers' money with which to facilitate this use.

Over the past three decades, this technology has trickled down from the mainframe to the desktop. For \$2,000, a person or organization can purchase everything needed to produce a computer-searchable bibliographic database—and that includes the computer with which to search it. A cottage industry of bibliographers has emerged, in which both professionals and amateurs apply the lessons learned by the database pioneers to make accessible such specialized materials as the contents of science fiction magazines, research studies on sea turtles, and papers on the mental health consequences of experiencing traumatic stress.

## **An Embarrassment of Riches**

The traumatic stress literature is rich and extensive; this poses some special challenges for those who use it. Finding the relevant literature on a trauma-related topic is especially difficult because the field is both diverse and evolving rapidly.

The literature on traumatic stress is interdisciplinary in nature. Valuable papers are published, not only in the psychiatry and psychology journals, but also in those dealing with social work, sociology, criminology, law, and general medicine. Publications devoted to specialized forms of treatment, such as acupuncture or art therapy, or to medical specialties, such as hand surgery or pediatric gynecology, will contain

the occasional article or chapter on traumatic stress. While some of these are superficial introductions intended to acquaint practitioners with the concept of Post-Traumatic Stress Disorder, others offer unique information on particular presentations or treatments of PTSD.

Typically, the literature for these different disciplines tends to be indexed in separate databases. The physician or psychologist whose concerns lie within the mainstream of his or her profession has little difficulty in searching the literature. The National Library of Medicine's MEDLINE database sets the standards of design, scope, and accuracy against which other bibliographical projects are measured. It is readily accessible in a variety of formats, is one of the least expensive databases to search, and has an elaborate vocabulary of indexing terms which is updated annually. The American Psychological Association's PsycINFO database is a searchable version of *Psychological Abstracts* with additional entries for book chapters, conference reports, doctoral dissertations, and technical reports. (The CD-ROM version, PsycLIT, omits the dissertations and reports.) PsycINFO is highly regarded by librarians and psychologists for the extent of its indexing vocabulary and the accuracy of its staff-written abstracts.

There are also many specialized databases covering the social science literature as it relates to mental health. *Mental Health Abstracts*, produced by the IFI/Plenum Data Company, emphasizes psychopharmacology, paramedical sciences, and forensic literature in its indexing. *Social Work Abstracts* is produced by the National Association of Social Workers, and indexes not only the core domestic social work journals but also many foreign papers. The *Sociological Abstracts* database includes not only citations and abstracts from the printed version of *Sociological Abstracts*, but also doctoral dissertations, conference papers, book reviews, and material from *Social Planning, Policy & Development Abstracts*. Although there may be considerable overlap between the publications they cover and those indexed in a more general database such as PsycINFO, a database that is prepared from the perspective of a particular discipline may well be more useful to its practitioners.

Similarly, there are well-regarded bibliographical databases covering other fields related to traumatic stress studies. The literature of law

is covered by the H. W. Wilson Company's *Index to Legal Periodicals* and by the *Legal Resource Index*, which is produced by the Information Access Company under the sponsorship and editorial guidance of the American Association of Law Libraries. The literature of criminology is covered by the *Criminal Justice Periodical Index*, which is produced by University Microfilms International, and by the *National Criminal Justice Reference Service* (NCJRS), sponsored by the National Institute of Justice. Public policy issues are indexed in the *PAIS International* database, produced by the Public Affairs Information Service. And there are many more such databases.

In addition to the challenge presented by a highly decentralized literature, a trauma researcher must cope with terminology that is constantly changing to reflect the rapid progress of the field. Each of these databases has its own list of subject terms, which highly-trained indexers use to characterize the content of each paper. These terms, along with author names, journal titles, and words occurring in the title or abstract of a paper, can be used to isolate references to publications likely to be relevant to a particular inquiry.

Because the terminology employed by indexers always lags behind the words that active scientists use in describing their research, it is useful to be able to search for all recent papers that cited some particular previous paper. Searching for cited references offers a way of locating articles in a field too new or too specialized to be covered adequately by existing indexing vocabularies. This approach to indexing the literature is provided by the Institute for Scientific Information, whose *SciSearch* and *Social SciSearch* databases are citation indexes. Citation indexing originated in the legal literature, where it is frequently necessary to determine if a judicial decision was amplified or overturned by a later case. Its use in scientific bibliography is based on the assumption that the citation of one publication by a subsequent one implies an intellectual relationship between the content of the two papers. Many studies by information scientists have shown that this assumption is true. Because these databases also allow "key word" searching—that is, searching for articles containing particular words in their titles or abstracts, or additional words or phrases supplied by the author or indexer—it is not necessary to have a specific article in mind

before beginning a cited-reference search. Once a pertinent paper is identified using a key word search, any publication in which that paper is cited can then be found. This process can be repeated, allowing the searcher to locate several generations of papers emerging from an evolving area of research activity. Cited-reference searching is a complicated procedure, and the ISI databases are expensive; but in knowledgeable hands they are powerful bibliographic tools.

## **Choosing a Database**

Given this bibliographical abundance, how does one decide where to begin a search of the literature?

The process of literature searching consists of matching concepts that describe the searcher's information needs with concepts that describe the content of existing publications. Computerized database searching, whether done online or on CD-ROM, makes this process much faster and far more efficient than manual searching. But, whether done manually or by computer, a literature search must take into account the features and limitations of the source being used.

The most important of these is the coverage offered by the bibliographical service. This may be defined in terms of language, nationality, time period, subject matter, or source of original publication; there are many other possibilities as well. A database that covers only material published after 1969 will be of limited use to someone interested in a historical approach to a field. One that is limited to English-language materials may serve the needs of a monolingual practitioner, but will not provide the scholar or researcher with access to all the work of European, Asian, and Latin American writers.

Many databases systematically exclude certain formats of publications from their indexing. It is unusual to find references to newspaper articles except in databases devoted specifically to newspaper indexing or in a few business-oriented databases. Technical reports, doctoral dissertations, and other forms of "gray literature" are often excluded from databases, and many do not include books or book chapters. MEDLINE's coverage, like that of many databases, is limited to articles appearing in journals, and only certain journals at that.

Most bibliographical databases index only the journals included on a predetermined list. This list is chosen by the database producers—often with input from an advisory board representing users—to ensure balanced coverage of the field and inclusion of its most important journals. There is an element of positive feedback to this process. The more prestigious journals are indexed in many databases, including the most important ones. This contributes to the greater impact of the papers they publish, which in turn makes writers more eager to submit their work to those journals. Those databases with a reputation for indexing the highest quality journals tend to be conservative about adding titles to their coverage. It often takes several years for a new journal to be selected: the *Journal of Traumatic Stress*, which published its first issue in January 1988, was not added to the list of serials indexed in MEDLINE until February 1994—and MEDLINE's coverage will not include pre-1994 issues.

The major health-related databases go back only 20 to 30 years in their coverage. (MEDLINE's begins with 1966, PsycINFO's with 1967.) Most database users can accept the chronological limitations of the bibliographical resources that they are using, and are seldom affected by the fact that only papers published within the last few decades are indexed. (Unlike work in the humanities, social science and medical publications tend to have a short shelf life.) The most important restriction on database coverage is the subject matter, which in many databases is defined by the list of sources from which documents are taken to be indexed. So in deciding upon a database to search, the first question to ask is, "Does this database index the publications in which the information I am seeking is likely to be found?"

To determine this, be sure to consult the documentation for the database you are using. The *PsycINFO User Manual* contains a list of the journals indexed in that database, as well as an explicit statement of the dates covered by the database. The National Library of Medicine publishes an annual *List of Serials Indexed for Online Users* that includes all titles covered by MEDLINE and other NLM databases. Almost every database that confines its coverage to a predetermined list of publications issues a list of the titles it covers. In addition, many journals list in each issue the indexes and databases that cover their

contents. *Ulrich's International Periodicals Directory*, which can be found in most libraries, lists the abstracting and indexing services that cover each journal.

Not all databases restrict their coverage to a predetermined source list. PsycINFO, for example, indexes not only journals but books and dissertations as well. While a list of the journals is available, the only way to determine whether a particular book or dissertation is likely to be indexed is to have a good idea of the selection criteria employed by PsycINFO's compilers. If a printed bibliography or a database describes itself as containing relevant material from any available source, the obvious question the searcher must ask is "relevant to what?" Knowing how the producers of a bibliography define their subject coverage and determine which publications meet their criteria is an essential part of the decision whether to use it.

Any bibliographical resource worth using will provide potential users with the information they need to make this decision. In a printed bibliography, careful attention should be paid to any definitions of scope or approach contained or implied in the title or subtitle, and to any prefatory or introductory material. With a computerized database, whether searched online, via CD-ROM, or as a file on the user's own hard disk, it is essential to read both on-screen and printed documentation. In many cases, several levels of documentation are offered, ranging from a one- or two-page list of basic search commands to a multivolume series of search manuals, vocabulary lists, and sample searches. Using a bibliography without consulting its documentation is like using a cookbook without reading the recipes—in either case the results are likely to be unpalatable.

Those who plan to search a database frequently should study its documentation before first using it, and have a copy to hand whenever preparing or performing a search. In many cases this material will be available for consultation at the reference desk of the library at which you do your searching. Even if you prefer to perform your own database searches at home or in your office, it is worth visiting the library to use these aids to plan an effective search.

This brings up the issue of mediated versus end-user database searching. When online searching first became a reality, database ven-



dors charged users by the minute. This placed a premium on efficient searching, in which as much preparation as possible was done before logging on to the system. Most searches were performed by experts—highly trained librarians or subject specialists. In the past few years, the tendency has been to price online searching to reflect the value produced by the search rather than the time consumed by it. Under this regimen, the number of items retrieved by the search determines its final price, while the cost of typing search commands and evaluating the preliminary results they produce is negligible. More recently, the availability of databases on CD-ROM or through tape license agreements has allowed many institutions to offer their clientele unlimited searching at a fixed annual price. These developments remove one reason for discouraging information seekers (“end users” in library jargon) from doing their own searching.

But that does not mean that end users *should* do their own searches. Database searching is a complex process, and the continual emergence of new information products, searching features, and communications systems means that keeping one’s searching skills up-to-date is a full-time job. If a quick-and-dirty search yielding a few relevant papers is all that’s needed, there’s no reason why someone comfortable with database searching shouldn’t perform his or her own search. But if an exhaustive or authoritative search of the literature is needed—if one is planning a course of treatment for a patient or writing a doctoral dissertation—it is always best, no matter what the subject-matter under investigation or which database has been selected, to work with a reference librarian or other expert searcher to plan and execute a thorough search of the literature.

## **The PILOTS Database: What It Covers and What It Does Not**

As we have seen, until the development of PILOTS, no existing database covered the traumatic stress literature in its entirety. Furthermore, the best available coverage of this literature was provided by immense compendia of bibliographical information, whose very broad scope did not always allow for the precision of searching and ease of use that

could be offered by a smaller, more specialized database. And the difficulty of searching a multitude of databases, each reflecting a particular discipline's approach to classification and terminology, each with its own searching vocabulary and record structure, impeded the identification and use of literature from outside the searcher's home discipline.

The PILOTS database was established to make the world's literature on post-traumatic stress disorder and other forms of traumatic stress available to researchers, clinicians, policy makers, students, and others concerned with the mental-health sequelae of traumatic events. The goal of the PILOTS database is to index the traumatic stress literature in its entirety, citing every appropriate publication regardless of its disciplinary, linguistic, or geographical origin.

This is easy to proclaim and hard to implement. For one thing, how does one define "the traumatic stress literature in its entirety"? The compilers of MEDLINE face a relatively easy task in determining whether they have completed their work. A given paper either is published in a journal named in the *List of Serials Indexed for Online Users*, or it is not, but there is no ambiguity. In a database whose contents are chosen on the basis of subject matter rather than provenance, every paper examined requires the exercise of judgment. Inevitably there will be disagreement among those staff members who might be making the selections. ("Inter-indexer consistency" is a popular subject for investigation by information science researchers.) Even a single individual is likely to apply a set of criteria inconsistently, especially when dealing with a rapidly-growing, rapidly-changing field. It is hardly surprising that database users, especially those with strong ties to a particular ideology or discipline, will often regard such a database's selection criteria as ill-conceived or poorly applied—just as anyone who fails to find a favorite writer's latest novel in the catalog of the local public library may have questions about the librarian's book selection policy.

To alleviate this, we use several overlapping methods of searching the literature for papers appropriate for inclusion in the PILOTS database. We scan three weekly editions of *Current Contents on Diskette* (the Clinical Medicine, Life Sciences, and Social and Behavioral Sci-

ences editions) page by page, looking for papers whose titles suggest that their subject matter falls within our purview. When we request reprints from their authors, we enclose a cover letter describing the PILOTS database and asking for additional relevant publications. We also search MEDLINE, PsycINFO, and many other databases on a regular basis, using not only "post-traumatic stress disorder" and its synonyms as search terms, but also such phrases as "rape trauma" and "psychiatric sequelae." These databases include not only the various medical and mental-health indexes, but also seemingly unrelated databases such as *America: History and Life*, *Insurance Periodicals Index*, and *Religion Index*.

Many of the resulting citations are to papers already in PILOTS. The others we obtain from their authors or publishers, or from local libraries, interlibrary loan, or document delivery services. In every case, we examine the paper ourselves, determine the correct author and publication information, and assign our own descriptors and other indexing terms. We do not copy any proprietary material from other databases except in a few cases where we have secured licenses or permissions to use it. We are beginning to explore relationships with other organizations interested in the literature of traumatic stress, with a view to agreeing upon bibliographic standards that would allow indexing work done by information centers worldwide to be searched in a single database.

As researchers and clinicians active in traumatic stress work learn of the PILOTS database, many are eager to ensure that their publications are indexed. We often receive unsolicited books, reprints, and photocopies. We are always happy to get them, especially when they originate in countries poorly covered by Western bibliographical services.

Every publication that we receive is examined by an indexer who decides if it should be cited in the database. In doubtful cases, a second opinion is sought. All rejected papers are placed in a file for later evaluation by an invited reviewer. Any paper labeled by MEDLINE, PsycINFO, or certain other authoritative databases as dealing with PTSD is automatically included in PILOTS, even if it was originally rejected by our staff. These acquisition and evaluation procedures are

meant to prevent the omission from PILOTS of any papers that properly fall within its scope.

We defined the content of the PILOTS database as “the world’s literature on post-traumatic stress disorder and other forms of traumatic stress.” By this we mean any published material dealing with:

- post-traumatic stress disorder, as defined in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders*,
- any other mental disorders (as defined in DSM-IV and its predecessors) caused by or associated with direct or indirect exposure to an event perceived as traumatic, and
- any mental-health-related consequences of such exposure.

This casts a wide net. It includes not only those papers that explicitly discuss PTSD, but also most of the literature on multiple personality disorder (which DSM-IV has relabeled “dissociative identity disorder”) and much of that on borderline personality disorder, both of which are often associated etiologically with childhood trauma. It also includes literature on anxiety disorders, eating disorders, mood disorders, sleep disorders, somatization disorders—all of which may occur as a result of, or in association with, exposure to a traumatic experience.

There are obvious gray areas here. Does an article on depressive symptoms among people recently widowed belong in the PILOTS database? What about a study of somatic symptoms among former prisoners of war? A report on the prevalence of psychiatric disorders among rape survivors seems an obvious choice for inclusion; but what about one that concentrates on the prevalence of rape itself? The first of these papers would not be chosen for PILOTS, though we would occasionally bend the rules and include a comprehensive literature review that could provide PILOTS users with an overview of its topic (and a list of further readings). The second and third would be included in the database. The fourth would be evaluated for its potential usefulness to PILOTS users, and would be included if it were epidemiological rather than journalistic in its approach.

Researchers studying PTSD cannot expect to find that every paper that would be useful to their work will be included in the PILOTS database. There are too many fruitful approaches to investigating traumatic stress, and too many potentially valuable insights to be found throughout the mental health literature, to make that feasible. Insight into the predisposition of some individuals to display the symptoms of PTSD may be gained from studying the etiology of panic disorder; the neuropharmacology of traumatic stress may be elucidated by comparison with schizophrenia. Traumatic stress research will often require the use of other bibliographical databases. But it is our intention to include any published literature directly relevant to traumatic stress that might be found in any other database, thus making PILOTS the database of choice in which to begin a search of this literature.

Users of the PILOTS database should be aware of some types of material that have been deliberately excluded from coverage. Newspaper articles, whether in the general press or in specialist publications, are not included, with the exception of substantial articles appearing in separately-named magazine sections (such as *The New York Times Magazine*). Unpublished conference presentations, manuscripts submitted for publication but not yet in print, and technical reports whose circulation is restricted are also excluded.

There are several classes of material that will be added to the database in the future but which are at present not indexed. These include audiovisual materials, doctoral dissertations, most government documents and general-circulation technical reports, and most material in languages other than English. The traumatic stress literature is abundant, and the PILOTS database staff is small; priorities have to be established and choices have to be made. No doubt there are many valuable films and videotapes about traumatic stress. But how can one index a 90-minute film without spending 90 minutes watching it? In that same time we can index six or eight journal articles. As time and resources permit, as we are able to recruit linguistic expertise (to date we have collected literature in over 20 languages), as inter-institutional cooperation in indexing the traumatic stress literature becomes a reality, these too will be included in PILOTS.

## Developing Your Search Strategy

A database search is really a three-step process. First, you put together a search strategy. Then you execute the search. And then you examine the results and modify your search accordingly.

Think of a database search as an exercise in pattern matching. You tell the computer what pattern of letters, words, or phrases you are looking for, and it attempts to match that pattern with those it finds in the database. You can tell the computer where in the database to look for a pattern and you can tell it to search for a combination of patterns. The success of your search depends on the clarity with which you form the pattern you try to match, the accuracy with which you type it into the computer, and the skill and completeness of the database producer. Two out of the three are up to you.

The PILOTS database may be searched in many different ways. Among the possibilities, you can search for

- the writings of a particular author,
- publications from a designated journal,
- papers in which a specific assessment instrument is used,
- material in a particular language,
- studies published in a designated year or period of time, and
- articles and chapters on a particular subject.

There are two basic approaches to searching the PILOTS database: controlled vocabulary and natural language. In *controlled vocabulary* searching, you are instructing the computer to match terms from a prescribed list against those occurring within the records contained in the database. In *natural language* searching, you are telling the computer to match words or phrases that you think might occur in the bibliographical records, regardless of whether they appear on a prescribed list of terms. Using either method, the occurrence of a match should indicate that the paper in which it is found discusses the subject indicated by the word, phrase, or term entered. Each method offers advantages and disadvantages. Many users will find that a combination of both types of searching will produce the best results.

*Controlled vocabulary searching* takes advantage of the work done by the database producer to standardize the terminology used by the thousands of authors and editors who produce the traumatic stress literature. This standardization is especially important in an interdisciplinary field, as there is no assurance that the terms used by psychiatrists will necessarily match those used by criminologists, or art therapists, or social workers. Even within a discipline, changes in terminology occur over time, or across geographic or ideological boundaries.

We use two vehicles for standardizing terminology in the PILOTS database.

- *Authority* lists ensure consistency in the way that names (of authors, journals, incidents, etc.) are entered in PILOTS. These are continually-updated, alphabetical lists that we maintain at the National Center. When adding new records to the database, we check all names against the appropriate authority lists.
- The PILOTS Thesaurus is a listing of descriptors used to describe the subject content of a document in the PILOTS database. It consists of two parts. One is a hierarchically-arranged table of descriptors that specifies the relationship between broader and narrower terms. For example, you would find "Neuroendocrine Testing" as the narrowest descriptor term in one hierarchy, with the term "Biologic Markers" listed as a broader term, and "Assessment" as the broadest term in that hierarchy. The second part of the Thesaurus is an alphabetical index of descriptors and "entry terms." Descriptors are listed in the alphabetical index along with corresponding broader, narrower, related terms, and unapproved terms for which the descriptor is used. "Entry terms" are non-descriptor terms that a database user might have in mind. If you look up an entry term, you are referred to the appropriate descriptor term. For example, you might look up "Transgenerational Effects" and find that the appropriate descriptor is "Intergenerational Effects."

*Natural language searching* (sometimes called "free text" searching) allows you to use the terms that you are most comfortable with; it does

not require you to use the PILOTS Thesaurus. And it provides a way to locate material on subjects that are too new to be included in the Thesaurus, or that the Thesaurus does not cover well enough for your particular need. However, it is neither as precise nor as complete a way of searching as using a controlled vocabulary. Natural language searching offers too many opportunities to retrieve irrelevant material. For example, searching for the word “shifts” to discover papers on the effects of work schedules in exacerbating PTSD uncovered nothing on that subject—but did turn up several articles discussing paradigm shifts in the sciences underlying traumatic stress studies. That same search would not find an article whose author disdained the word “shifts” in favor of “irregular work hours.”

If you simply want to find a few publications relevant to your area of interest, natural language searching is an easy way to go about it. But if you need to make a thorough study of the literature, and you wish to be sure that you do not miss important papers, you should not rely upon natural language searching alone.

## Modifying Your Search Strategy

It often happens that a search of PILOTS (or any other database) does not produce the results that you expect. Database searching works best as an iterative process. Don't expect to get definitive results with your first try; plan on doing an exploratory search, and then modify your search strategy according to the results you get. Here are some suggestions:

*If your search produces an impossibly large number of citations, examine at least a few of them to see whether you defined your topic too broadly, or used too broad a search strategy.*

- If almost all of them are indeed relevant, ask yourself how you can redefine your *objective*. Perhaps you should choose a narrower topic: for example, natural disasters rather than disasters in general.
- If many of the citations your search has retrieved are irrelevant,



you need to refine your *search strategy*. Look at some of the irrelevant citations, and see what they have in common. Does the same descriptor appear in all of them? If you repeated your search without using that descriptor would you be eliminating valuable citations as well as irrelevant ones? If not, you've found one way of bringing your search results down to a more manageable size. Other methods to refine a search might include restricting your search by language, or by date, or by format.

*What if your search has retrieved fewer citations than you think it should have?*

- Perhaps there really *are* very few papers in your area. (Or at least very few that have found their way into PILOTS.)
- Or perhaps your search strategy was too narrow. Again, look at your results. Find a citation that is directly relevant, and see what descriptors were applied to it. Perhaps you might want to add one or more of them to your search strategy.
- And don't forget to double check to be sure that you weren't done in by a simple typing error. The computer has no way of knowing that you meant "alcohol" when you typed "alvohol"!

*And what if you could find no relevant citations?* Is there a paper that you know to be relevant? Then search for that paper by author and title, retrieve the citation, and see how it was indexed in PILOTS. That might suggest one or more descriptors to use in searching.

Don't be discouraged if your first search strategy doesn't work perfectly. Experts at database searching often have to modify their search techniques, especially when working with a database that is new to them. And don't be surprised if you come across a citation whose indexing seems strange to you. This is a complex literature, and the indexer is, after all, perforce a generalist. You may well know more about the topic than the indexer does. And if you find a paper that you believe has been incorrectly indexed, please let us know. We don't mind correcting our mistakes.

## **How to Obtain Copies of Materials Found in PILOTS**

Many large database producers offer a document delivery service that for a fee provides users with photocopies of publications discovered by their searches. Smaller organizations are seldom able to provide this service, as they have neither the resources to provide it with existing staff nor the demand to justify adding people dedicated to the task. The National Center for Post-Traumatic Stress Disorder maintains a PTSD Resource Center, which contains every publication indexed in the PILOTS database. However, it has not so far been possible to provide copies of these to PILOTS users. In order to keep the PILOTS database up to date, the Resource Center staff must devote its time to identifying, acquiring, and indexing publications on traumatic stress, as well as preparing the database for searching, writing instructional materials, and providing technical assistance to PILOTS users. It has neither the staff nor the facilities to receive requests, retrieve the documents, make photocopies, and prepare them for mailing, nor is it in a position to make the legal and financial arrangements and keep the detailed records necessary to comply with copyright laws and guidelines.

It may be possible to circumvent these difficulties by contracting with an outside organization to provide a document delivery service to PILOTS users. This contractor would receive orders, handle all the details of fulfillment, and be responsible for all matters of copyright compliance and royalty payments. The National Center is currently exploring this possibility. Meanwhile, these suggestions will help PILOTS users and other traumatic stress workers obtain the journal articles, book chapters, and other materials that they need.

The first place to begin is your local library. If you have access to a medical library, ask the librarian to get copies from the regional medical library system. (All VA medical libraries are part of this system.) Many public and academic libraries belong to networks that make the resources of large libraries available to the clients of smaller ones. In some cases materials can be provided free of charge; otherwise, you may have to pay a small fee for each article you request. (If your request does not come under the "fair use" provision of the copyright

laws, there may also be a royalty fee payable to the publisher that your library will have to collect.) Your local librarian will know the fastest and cheapest ways to get what you need.

There are several organizations and companies that specialize in providing rapid copies of publications.

*Information brokers* offer a complete range of services, from searching databases to providing copies. Document delivery services offer copies of materials from their own resources and often from other library collections. If your needs require it, and you are willing to pay the extra costs involved, you can receive copies by courier or fax. Information brokers can be found in the Yellow Pages, and in the "Brokers Mart" listing published in *Database* magazine. Their trade association is:

- Association of Independent Information Professionals  
203 Pinehurst Road  
Canyon, California 94516  
(510) 530-3635

*Document delivery services* are operated by private companies, non-profit organizations, and libraries. They usually offer a wide range of ordering and payment arrangements, accomodating users whose needs range from the single article to thousands of papers each year. Many are able to accept orders by electronic mail. In addition to many services that specialize in material on a particular subject or from a particular region, there are several whose resources allow them to offer a comprehensive service. Among these are:

- CARL Systems, Inc. ("Uncover")  
3801 East Florida Avenue  
Building D, Suite 300  
Denver, Colorado 80222  
(303) 758-3030
- University Microfilms, Inc. ("Article Clearinghouse")  
300 North Zeeb Road  
Ann Arbor, Michigan 48106  
(800) 521-0600

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## **Conclusion**

Any interdisciplinary literature, especially one in which exciting discoveries are continually being reported and controversial opinions frequently expressed, presents both a challenge and an opportunity to those working in the fields it covers. The challenge lies in the fact that the already difficult task of keeping up with the field one was trained in must be repeated in several other, less familiar areas. The opportunity lies in the ability to apply the work of colleagues with an entirely different outlook to problems that often resist the solutions suggested by one's own background.

The ability to identify, evaluate, and benefit from the publications of those working in disciplines cognate to one's own is one of the most powerful tools with which a researcher or clinician can equip him- or herself. A basic understanding of the bibliographic infrastructure of medicine and the social sciences, and a knowledge of the many ways in which bibliographical databases can be searched, are necessary to use the literature effectively. The PILOTS database offers an approach to the traumatic stress literature that has been designed especially to meet the needs of those working in this fast-growing interdisciplinary field.

## Access to the PILOTS Database

The PILOTS database is available to users worldwide as a file on the Dartmouth College Library Online System. No account or password is necessary and there is no charge for using the database. Internet users can telnet to [lib.dartmouth.edu](http://lib.dartmouth.edu) and at the prompt enter SELECT FILE PILOTS. A PILOTS Database User's Guide may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington DC 20402 or downloaded free of charge from [ftp.dartmouth.edu](http://ftp.dartmouth.edu/directory/pub/ptsd) (directory /pub/ptsd). Gopher users may connect to [gopher.dartmouth.edu](http://gopher.dartmouth.edu) and look under Research Resources / Biological Sciences. World Wide Web users can connect to the PILOTS database at <http://www.dartmouth.edu/dms/ptsd/>. For further information, contact:

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